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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,848	11/25/2002	Evangelos Laskaris	040849-0194	9715
7590 12/29/2005 General Electric Company (PCPI) c/o Fletcher Yoder P. O. Box 692289 Houston, TX 77269-2289			EXAMINER FETZNER, TIFFANY A	
			ART UNIT 2859	PAPER NUMBER

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,848

Applicant(s)

LASKARIS ET AL.

Examiner

Tiffany A. Fetzner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/14/2005 (the Appeal Brief).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED Non-final ACTION after appeal brief

Response to Appeal / Arguments

1. In view of the Applicant's appeal brief and arguments filed on October 14th 2005, PROSECUTION IS HEREBY REOPENED. ***New grounds of rejection*** are set forth below containing a clearer explanation of how the pending claims are met by the prior art applied below is provided. The rejections below are not the same as the previous final office action, even though the **Bryne et al.**, reference is still being applied, as a main reference, because there is confusion over the structural components of **Bryne et al.**, and the function of those components.
2. The earlier art rejections from the January 11th 2005 office action are **rescinded**. All previous grounds of rejection are rescinded in view of the new detailed explanation and prior art rejections provided below.
3. To avoid abandonment of the application, appellant must exercise one of the following two options:
 - (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
 - (2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.
4. A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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6. **Claims 1-12 and 14-23** are rejected under **35 U.S.C. 102(b)** as being anticipated by **Bryne et al.**, US patent 6,211,676 B1 issued April 3rd 2001.

7. With respect to **Amended Claim 1**, **Bryne et al.**, teaches and shows "An open magnetic resonance imaging (MRI) device" [See abstract, figure 1]. **Bryne et al.**, teaches and shows, that the device comprises "~~at least one~~ a main coil" (i.e. main driving coils 1a and 2a shown in figures 1 and 2, of main magnetic poles 1 and 2), "for generating a magnetic field for imaging a volume" [See col. 3 lines 7-42; and imaging volume 3 of figures 1 and 2.] **Bryne et al.**, also teaches and shows "~~at least one~~ a plurality of shaping coils", (i.e. the concentric coil components 1e, 1f, 2e, and 2f of col. 3 lines 10-46) Additionally, Figures 1 and 2 show that the concentric coil components 1e, 1f, 2e, and 2f of figure 1; or iron rings 1b, 1c, 2b, and 2c shown in figure 2 which comprise the shaping means for constraining the magnetic field, as taught in col. 3 lines 7-45, are shown in figure 1 as "~~being positioned~~" in a location which comprises at least one of the following positions: "radially inside relative to said ~~at least one~~ main coil" (i.e. see figure 2 where coils 1b, 1c, are positioned radially inside driving coil 1a; and coils 2b, 2c which are positioned radially inside driving coil 2a.); "axially further from said volume than said main coil" (i.e. see figure 2 where coils 1b, 1c, are positioned "axially further from said volume than said main" driving "coil" 1a; and coils 2b, 2c which are positioned "axially further from said volume than said main" driving "coil" 2a.); "or in a plane of said main coil" [See figure 1 col. 2 line 30 through col. 4 line 53, and the abstract. From figures 1 and 2 it is clear that the concentric coil components 1c, 2c, 1e, 1f, 2e, and 2f; which comprise the shaping means for constraining the magnetic field, are located "in a plane of said main coil" or in the case of components 1b, and 2b have at least a side portion of there physical structure "in a plane of said main coil" (i.e. driving coils 1a, 2a, represent the driving coils of **Bryne et al.**

8. The examiner notes that in Figure 2 of the **Bryne et al.**, reference each of the shaping coils 1b, 1c, 2b, 2c are located "axially further from said volume" (i.e. component 3 of figures 1 and 2 "than said main coil" components 1a, and 2a of

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figures 1 and 2, "or in a plane of said main coil" [See figures 1 and 2 col. 2 line 30 through col. 4 line 53; components 1b, 1c, 2b, 2c, 1e, 1f, 2e, 2f].

9. With respect to **Claim 2, Bryne et al.**, teaches and shows "a single unit support structure" [See Figure 2 the single "C" shaped magnet] "wherein said at least one main coil" (i.e. components 1a, 2a,) "is positioned on an outer surface of said single unit support structure", [See figure 2] "and wherein said at least one shaping coil" (i.e. the shaping components 1b, 1c, 2b, 2c of figure 2) "is positioned on an inner surface of said single unit support structure". [See figures 1, and 2, col. 3 lines 7-45] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2** and need not be reiterated.

10. With respect to **Claim 3, Bryne et al.**, teaches and shows that "said single unit support structure comprises: a substantially" C-shaped "cylindrical shell;" [See figures 1 and 2 where the horizontal / longitudinal distance of component 4c mirror-symmetrically in figure 1; and the horizontal length of components 1a and 2a in figure 2, define a substantially cylindrically shaped area about the imaging volume 3.] **Bryne et al.**, also show "a hub positioned along a substantially central axis of said cylindrical shell" [See figures 1 and 2, because the horizontal / longitudinal distance of component 4c mirror-symmetrically in figure 1; and the horizontal length of components 1a and 2a in figure 2 also define the main "hub" of the open MRI system which supports a patient to be imaged within the imaging volume 3].

11. **Bryne et al.**, figure 1 also shows "a plurality of gussets" (i.e. the trapezoidal, triangular, and angled support components which are not numerically numbered but are shown securing / holding / retaining the **shielding coils 5** at there respective appropriate locations). The examiner notes that because gussets are clearly shown in figure1, the presence of a "plurality of gussets positioned within said cylindrical shell" is provided by the illustration of figure 1 itself. Also while the term "gusset" is not explicitly recited by the text, a plurality of unlabeled "gussets" are still illustrated in figure 1 and therefore are an intrinsic structural component within the **Bryne et al.**, reference, de to the fact that they are illustrated in figure 1.

12. Additionally, figure 1 shows that "each of said gussets" (i.e. the trapezoidal, triangular, and angled support components which are not numerically numbered but are

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shown securing / holding / retaining the shielding coils 5 at there respective appropriate locations), "extending radially outward from said hub" [See figure 1]. The same reasons for rejection, that apply to **claims 1, 2** also apply to **claim 3** and need not be reiterated.

13. With respect to **Claim 4, Bryne et al.**, shows that "at least one support post positioned between a first half and a second half of said cylindrical shell." [See figure 1]. The same reasons for rejection, that apply to **claims 1, 2, 3** also apply to **claim 4** and need not be reiterated.

14. With respect to **Claim 5, Bryne et al.**, shows that "at least one support post is attached on one end to a flange formed on the first half of said cylindrical shell and attached on an opposite end to a flange formed on the second half of said cylindrical shell". [See figures 1, and 2]. The same reasons for rejection, that apply to **claims 1, 2, 3, 4** also apply to **claim 5** and need not be reiterated.

15. With respect to **Claim 6, Bryne et al.**, teaches that "at least one of: said cylindrical shell, said hub, and said gussets comprise one of stainless steel, aluminum, and fiber-reinforced composites." [See col. 2 lines 3-9; especially col. 2 lines 8-9]. The same reasons for rejection, that apply to **claims 1, 2, 3** also apply to **claim 6** and need not be reiterated.

16. With respect to **Claim 7, Bryne et al.**, teaches and shows "at least one ferromagnetic ring positioned on an outer surface of said single unit support structure." [See figure 2 iron ring components 1b, 1c, 2b, and 2c col. 3 lines 7-23] The same reasons for rejection, that apply to **claims 1, 2** also apply to **claim 7** and need not be reiterated.

17. With respect to **Claim 8, Bryne et al.**, teaches and shows "at least one ferromagnetic ring" [See figure 2 components 1b, 1c, 2b, and 2c] "is positioned" [See figure 2] "substantially between coils having opposite" (i.e. reversed) "current directions" [See col. 4 lines 24-43; col. 3 lines 7-23]. The same reasons for rejection, that apply to **claims 1, 2, 7** also apply to **claim 8** and need not be reiterated.

18. With respect to **Claim 9, the Bryne et al.**, reference directly shows from figure 2 that "said MRI device comprises at least four ferromagnetic rings", because figure 2 shows at least eight ferromagnetic rings, (i.e. Iron is a ferromagnetic material). [See

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components 1b, 1c, 2b, and 2c]. The same reasons for rejection, that apply to **claims 1, 2, 7** also apply to **claim 9** and need not be reiterated.

19. With respect to **Claim 10**, **Bryne et al.**, reference teaches and suggests the presence “at least one bucking coil” [See figures 1 and 2 col. 3 lines 14-47] because the **Bryne et al.**, reference teaches controlling higher order terms and leakage flux with coils, rings or combinations of both, [See col. 3 lines 14-23] and additionally teaches that although not shown in the drawing there are ‘a plurality of pieces of magnetic shimming material supported by a pair of non-magnetic plates associated respectively with the field coils 1 and 2’ (i.e. components 1a, 2a) ‘and positioned so that the diametrical axis of the plates lie orthogonal to the direction of the lines of flux passing between the poles 1 and 2 in the imaging volume 3’, which adjust the magnetic flux of the image volume 3 to a high degree of homogeneity. [See col. 3 lines 24-42] This teaching directly suggests the presence of “at least one bucking coil” because the plates and plurality of pieces of shimming material serve as an additional means of compensating for and controlling / preventing stray magnetic field lines increasing magnetic homogeneity], which are “positioned on an outer surface of said single unit support structure for shielding the magnetic field” of the magnetic flux passing between magnetic poles 1 and 2. [See col. 3 lines 7-42]. The same reasons for rejection, that apply to **claims 1, 2**, also apply to **claim 10** and need not be reiterated.

20. With respect to **Claim 11**, the **Bryne et al.**, reference directly suggests “at least two bucking coils”, the presence of a plurality of pieces of magnetic shimming material are taught. [See col. 3 lines 7-42]. The same reasons for rejection, that apply to **claims 1, 2, 10** also apply to **claim 11** and need not be reiterated.

21. With respect to **Claim 12**, the **Bryne et al.**, reference shows via figures 1 and 2, that there are “at least eight shaping coils” [See figures 1 and 2 where eight components identified by the component numbers 1e, 1f, 2e, 2f, 1c, 2c, 1b, and 2b are shown. See also the teachings of col. 3 lines 7-42]. The same reasons for rejection, that apply to **claim 1**, also apply to **claim 12** and need not be reiterated.

22. With respect to **Claim 14**, the **Bryne et al.**, reference shows from figures 1 and 2, “an even number of shaping coils” [See figures 1, 2 col. 3 lines 7-42 since both the

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iron rings 1c, 2c, 1b, 2b; and the concentric coils 1e, 2e, 1f, 2f are used to cancel out higher order magnetic field terms and achieve a high degree of magnetic flux homogeneity. The examiner also notes that in figure 2 there are two components for each of the component numbers 1e, 1f, 2e, and 2f; while in figure 1 there are also two components for each of the component numbers 1b, 1c, 2b, and 2c, which suggests at least eight components for shaping the magnetic field whether coils, rings, or a combination of both as in col. 3 lines 7-45.]. The same reasons for rejection, that apply to **claim 1**, also apply to **claim 14** and need not be reiterated.

23. With respect to **Claim 15**, the **Bryne et al.**, reference teaches and shows from figures 1, 2 that "a first half of the number of shaping coils have a first magnetic polarity and a second half of the number of shaping coils have a second magnetic polarity substantially opposite that of said first magnetic polarity", because poles 1 and 2 are taught to be of opposite polarity, and that some of the concentric coils, or some of both the concentric coil and rings may be connected in reverse so that the current opposes the current in the main coils. Additionally because the poles are polarized in opposite directions coils 1e, 1f, which comprise have of the concentric coils, have a magnetic polarity different than concentric coils 2e, and 2f. [See figures 1 and 2 col. 2 line 30 through col. 3 line 45] The same reasons for rejection, that apply to **claims 1, 14**, also apply to **claim 15** and need not be reiterated.

24. With respect to **Claim 16**, the **Bryne et al.**, reference shows from figures 1 and 2 and teaches from col. 3 lines 7-45 "a plurality of shaping coils", (i.e. components 1e, 2e, 1f, and 2f) with "at least one of said plurality of shaping coils having a magnetic polarity opposite to a magnetic polarity of another of said plurality of shaping coils [See col. 3 lines 7-45]. The same reasons for rejection, that apply to **claims 1, 2, 7, 14, 15** also apply to **claim 16** and need not be reiterated.

25. With respect to **Amended Claim 17**, the **Bryne et al.**, reference shows from figures 1 and 2, a magnetic resonance imaging (MRI) apparatus for imaging a volume:, [See figures 1 and 2 the abstract, and imaging volume 3] comprising "at least one main coil", (i.e. components 1a, 1b of figures 1 and 2) "configured to generate a magnetic field;" [See col. 3 lines 7-42; col. 2 lines 30 through col. 3 line 6] "at least one bucking

coil" [See the rejection of claim 10] "**disposed axially outside said at least one main coil with respect to said volume**" [See figures 1, 2 and col. 3 lines 7-45] "**and** configured to shield said at least one main coil;" [See col. 3 lines 7-53 the main coil components are coils 1a and 2a in figure 1] "a plurality of shaping coils to shape said magnetic field in said volume" (i.e. shaping concentric ring components 1e, 2e, 1f, 2f shown in figures 1, 2; col. 3 lines 7-45] "and a plurality of ferromagnetic rings" (i.e. iron ring components 1b, 1c, 2b, 2c of figure 2) "for shielding interactions between coils of opposite polarity", [See col. 3 lines 7-42] "at least one of said plurality of ferromagnetic rings being positioned between said at least one main coil and said at least one bucking coil" [See figure 2 in combination and the teachings of col. 3 lines 7-42]. The rejections of **claims 1, 7, 10, 11, 14, 15, 16**; Figures 1 through 15}. The same reasons for rejection, that apply to **claims 1, 2, 7, 10, 14, 15, 16** also apply to **claim 17** and need not be reiterated.

26. With respect to **Claim 18, Byrne et al.**, reference shows "a single unit support structure" [See figures 1-2, the single "C" shaped support structure, col. 1 line 36 through col. 3 line 53] "for supporting said at least one main coil, (i.e. components 1a, 2a, of figures 1, 2) "said at least one bucking coil" [See the rejection of claim 10] "said plurality of shaping coils", (i.e. components 1e, 1f, 2e, 2f of figure 1) "and said plurality of ferromagnetic rings" (i.e. iron ring components 1b, 1c, 2b, 2c of figure 2) [See col. 2 line 30 through col. 3 line 53 lines] The same reasons for rejection, that apply to **claims 1, 2, 7, 10, 14, 15, 16, 17** also apply to **claim 18** and need not be reiterated.

27. With respect to **Claim 19, the Byrne et al.**, reference shows and teaches from the **earlier rejections of claims 1, 2, 3**, which need not be reiterated that "said single unit support structure comprises: a substantially cylindrical shell; a hub positioned along a substantially central axis of said cylindrical shell", and a plurality of gussets positioned within said cylindrical shell, each of said gussets extending radially outward from said hub." {See figures 1-2; col. 1 line 36 through col. 3 line 53; and the abstract.} The same reasons for rejection, that apply to **claims 1, 2, 3, 7, 10, 14, 15, 16, 17, 18** also apply to **claim 19** and need not be reiterated.

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28. With respect to **Amended Claim 20, Byrne et al.**, teaches and shows "A magnetic resonance imaging (MRI) apparatus for imaging a volume", [See figures 1-2, abstract] "comprising: means for generating a magnetic field for imaging said volume" [See upper magnetic pole 1, lower magnetic pole 2, and electromagnetic coils 1a, 2a of figures 1 and 2] **Byrne et al.**, also teaches and shows a "means for shielding said means for generating" [See col. 3 lines 7-45, the **rejection of claim 10**, col. 2 lines 39 through col. 3 line 6; and shielding component 5 within the main body which confines the return flux to the illustrated C shaped structure of 1 and 2 of the main magnet body.] "and means for shaping said magnetic field" [See figure 2 the component numbers identified as iron ring components 2b, 2c, 1b, 1c which also effectively shape the magnetic field as per col. 3 lines 7-42] In figure 2 the examiner notes that these components and are shown "positioned radially inside the said means for producing the magnetic field" [See figure 2 the relation ship of components 1b, 1c, 2b, and 2c to components 1a,2a] and axially further from said volume" (i.e. imaging volume 3 in figures 1 and 2) "than said means for generating the magnetic field" (i.e. components 1a, 2a) "or in a plane of said means for generating the magnetic field." (i.e. concentric coil components 1e, 1f, 2e, 2f of figure 1 shows this alternative configuration [See figures 1 and 2 col. 2 line 39 through col. 3 line 53; iron shaping rings 1b, 1c, 2b, 2c, or concentric coils 2e, 2f, 1e, and 1f.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 20** and need not be reiterated.
29. With respect to **Claim 21, Byrne et al.**, shows in figures 1-2, a "means for supporting" (i.e. via the supporting structures shown [See col. 1 line 36 through col. 2 line 9] "said means for generating" [See upper magnetic pole 1, lower magnetic pole 2, and electromagnetic coils 1a, 2a, of figures 1, 2] "said means for shielding" [See components 5 col. 2 line 39 through col. 3 line 53 and figures 1 and 2]; "and said means for shaping". [See col. 2 line 39 through col. 3 line 53 figures 1 and 2 the component numbers identified as components 2b, 2c, 1b, 1c] The same reasons for rejection, that apply to **claim 20** also apply to **claim 21** and need not be reiterated.
30. With respect to **Claim 22, Byrne et al.**, teaches and shows a "means for shielding interactions between coils of opposite polarity." [See col. 3 lines 7-23 figures 1

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and 2]. The same reasons for rejection, that apply to **claims 1, 20** also apply to **claim 22** and need not be reiterated.

31. With respect to **Amended Claim 23, Byrne et al.**, teaches and shows "An open magnetic resonance imaging (MRI) device" [See figures 1-2, col. 1 lines 39 through col. 3 line 53; abstract] **Byrne et al.**, teaches and shows, that the device comprises "**first and second at least one main coils**" (i.e. electromagnetic coils 1a and 2a of figures 1 and 2) "for generating a magnetic field for imaging a volume" [See col. 1 line 30 through col. 3 line 53] **Byrne et al.**, also teaches and shows "**first and second sets of at least one shaping coils**", [See figures 1 and 2; components 1b, 1c, and 2b, 2c and components 1e, 2e, 1f, 2f.]. The examiner notes that in this independent claim that the iron ring components 1b, 1c, and 2b, 2c as well as concentric coil components 1e, 2e, 1f, 2f shapes the magnetic homogeneity and that the iron ring components 1b, 1c, and 2b, 2c also satisfy the remaining limitation of this claim because components 1b, 1c, 2b, and 2c are shown in figure 2 to be] "**positioned adjacent to each of said first and second main coils,** (i.e. components 1a, 2a) **respectively, each set of** ~~said at least one shaping coils~~" (i.e. iron rings 1b, 1c; or 2b, 2c) being positioned radially within the ~~said at least one main coil~~" [See figure 2] **and axially further from said volume**" (i.e. imaging volume 3 in figures 1 and 2) "**than said respective main coil**" (i.e. components 1a, 2a), "**or**" components 1e, 2e, 1f, 2f, of figure 1 are shown in figure 1 to be located "**in a plane of said respective main coil** to shape said magnetic field in said volume". [See col. 1 line 36 through col. 3 line 53 figures 1, 2, and the abstract; especially col. 3 lines 7-42.]. The examiner notes that each iron ring is also considered to be a single loop coil of annulus form.

Claim Rejections - 35 USC § 103

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

33. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

34. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

35. **Claim 13** is rejected under **35 U.S.C. 103(a)** as being unpatentable over **Bryne et al.**, US patent 6,211,676 B1 issued April 3rd 2001, as applied to claim 1 above, and further in view of **Chari et al.**, US patent 5,307,039 issued April 26th 1994.

36. With respect to **Claim 13**, the **Bryne et al.**, reference lacks directly teaching that "said at least one shaping coil" (i.e. coils 1e, 1f, 2e, 2f, or iron rings 1c, 1b, 2c, 2b) "shapes said magnetic field in said volume" (i.e. magnetic volume 3) "to a uniformity of at least 10 ppm." However, the **Bryne et al.**, reference does teach a magnetic field homogeneity range of 0.2 Tesla through 2.0 Tesla, with a homogeneity sphere of 30 cm – 50 cm in diameter. [See **Bryne et al.**, col. 1 lines 7-11]

37. Additionally, it is known from the teachings of the **Chari et al.**, reference [See **Chari et al.**, col. 3 lines 51 through col. 4 line 16; especially col. 3 lines 58-61 and col. 4 lines 12-16 where a ppm homogeneity uniformity of 41ppm and 26.8 ppm are each "at least 10 ppm] that, a 0.5 Tesla magnetic field of a 40 cm. imaging volume has a calculated homogeneity range of between 26.8-41ppm; and a 0.5 Tesla magnetic field of a 30 cm. imaging volume has a calculated homogeneity range of between 5.2-7

ppm., Therefore it would have been obvious to one of ordinary skill in the art at the time that the invention was made that the magnetic field strength in Tesla of **Bryne et al.**, (i.e. 0.2 Tesla through 2.0 Tesla), includes the 0.5Tesla value of the **Chari et al.**, reference, and that 30-50cm imaging volume, comprises the 30-40 cm. Imaging volume of the **Chari et al.**, reference. Additionally, it would have been obvious to one of ordinary skill in the art at the time that the invention was made that **Bryne et al.**, reference is capable of functionally producing a magnetic field with "a uniformity of at least 10 ppm", based upon the diameter of the imaging volume and the magnetic field homogeneity in Tesla provided in the **Bryne et al.**, reference, in combination with the known ppm calculations from the **Chari et al.**, reference. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Bryne et al.**, with the teaching of the **Chari et al.**, reference in order to determine the scope of the ppm range that the **Bryne et al.**, reference is capable of producing. The same reasons for rejection, that apply to **claim 1** also apply to **claim 13** and need not be reiterated.

38. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

A) ***Cheng et al.**, US Patent Application publication 2003/0001575 A1 published January 2nd 2003, filed January 19th 2001.

B) ***Cheng et al.**, PCT international publication WO 01/53847 A1 published 26 July 2001, filed January 19th 2001.

C) ***Danby** US patent 6,201,394 B1 published March 13th 2001, filed November 21st 1997.

D) **Dorri et al.**, US patent 5,565, 831 issued October 15th 1996; This reference teaches a structure similar to **Bryne et al.**, in a non-"C" configuration but fails to show the presence of "gussets". It is pertinent to all claims but the applied prior art above is considered to be the most relevant.

E) **Pulyer** US patent 5,378,988 issued January 3rd 1995.

F) **Ries** US patent 5,347,252 issued September 13th 1994. See entire reference.

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G) Huson et al., US patent 5,315,276 issued May 24th 1994 This reference teaches a structure similar to **Bryne et al.**, but fails to show the presence of "gussets". It is pertinent to all claims but the applied prior art above is considered to be the most relevant.

H) Westphal et al., US patent 5,485,088 issued January 16th 1996. [See entire reference.]

I) Ohashi et al., US patent 5,864,275 issued January 26th 1999. [See entire reference.]

J) Ohashi et al., US patent 5,963,117 issued October 5th 1999. [See entire reference.]

K) Minas et al., US patent 6,717,408 B2 issued April 6th 2004,; filed April 5th 2001. [See entire reference.]

L) Minas et al., US patent application publication 2002/0145426 A1 published October 10th 2002; filed April 5th 2001. [See entire reference.]

M) Laskaris et al., US patent application publication 2004/0100261 A1 published May 27th 2004; filed November 25th 2002. The examiner notes that this reference is the pre-grant publication of applicant's instant application, which is noted for the purposes of a complete record only, and is not available as prior art against the pending claims.

Conclusion

39. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

40. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.



TAF
December 23, 2005



Diego Gutierrez
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